Pct 10

CRF Errors Corrected by the STIC Systems Branch

CRF Processing Date: 6/17/2002
Edited by: _____
Verified by: _____ (STIC staff)

Serial Number: 10/031,146 ENTERED

- ☐ Changed a fil from non-ASCII to ASCII
- ☐ Changed the margins in cases where the sequence text was "wrapped" down to the next line.
- ☐ Edited a format error in the Current Application Data section, specifically: _____
- ☐ Edited the Current Application Data section with the actual current number. The number inputted by the applicant was ☐ the prior application data; or ☐ other _____.
- ☐ Added the mandatory heading and subheadings for "Current Application Data".
- ☐ Edited the "Number of Sequences" field. The applicant spelled out a number instead of using an integer.
- ☐ Changed the spelling of a mandatory field (the headings or subheadings), specifically: _____
- ☐ Corrected the SEQ ID NO when obviously incorrect. The sequence numbers that were edited were: _____
- ☐ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited: _____
- ☐ Corrected subheading placement. All responses must be on the same line as each subheading. If the applicant placed a response below the subheading, this was moved to its appropriate place.
- ☐ Inserted colons after headings/subheadings. Headings edited included: _____
- ☐ Deleted extra, invalid, headings used by an applicant, specifically: _____
- ☐ Deleted: ☐ non-ASCII "garbage" at the beginning/end of files; ☐ secretary initials/filename at end of file; ☐ page numbers throughout text; ☐ other invalid text, such as _____.
- ☐ Inserted mandatory headings, specifically: _____
- ☐ Corrected an obvious error in the response, specifically: _____
- ☐ Edited identifiers where upper case is used but lower case is required, or vice versa.
- ☐ Corrected an error in the Number of Sequences field, specifically: _____
- ☐ A "Hard Page Break" code was inserted by the applicant. All occurrences had to be deleted.
- ☐ Deleted ***ending*** stop codon in amino acid sequences and adjusted the "(A)Length:" field accordingly (error due to a PatentIn bug). Sequences corrected: _____
- ☑ Other: inserted closing bracket for <1207

*Examiner: The above corrections must be communicated to the applicant in the first Office Action. DO NOT send a copy of this form.

3/1/95

PCT10

RAW SEQUENCE LISTING DATE: 06/17/2002
PATENT APPLICATION: US/10/031,146 TIME: 19:41:50

Input Set : A:\PTO.AMC.TXT
Output Set: N:\CRF3\06172002\J031146.raw

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      3 <110> APPLICANT: HAUER, Bernhard
      4       PLEISS, Juergen
      5       SCHWANEBERG, Ulrich
      6       SCHMITT, Jutta
      8 <120> TITLE OF INVENTION: Novel cytochrome P450 monooxygenases and their use for the
oxidation of
      9       organic substrates
     11 <130> FILE REFERENCE: 50915
     13 <140> CURRENT APPLICATION NUMBER: 10/031,146
C--> 14 <141> CURRENT FILING DATE: 2002-04-30
     16 <150> PRIOR APPLICATION NUMBER: PCT/EP 00/07253
     17 <151> PRIOR FILING DATE: 2000-07-27
     19 <160> NUMBER OF SEQ ID NOS: 9
     21 <170> SOFTWARE: Word Perfect version 6.1
     23 <210> SEQ ID NO: 1
     24 <211> LENGTH: 3150
     25 <212> TYPE: DNA
     26 <213> ORGANISM: Bacillus megaterium
     28 <220> FEATURE:
     29 <221> NAME/KEY: CDS
     30 <222> LOCATION: (4)..(3150)
     32 <400> SEQUENCE: 1
     34 atg aca att aaa gaa atg cct cag cca aaa acg ttt gga gag ctt aaa   48
     35     Thr Ile Lys Glu Met Pro Gln Pro Lys Thr Phe Gly Glu Leu Lys
     36       1               5                  10                  15
     38 aat tta ccg tta tta aac aca gat aaa ccg gtt caa gct ttg atg aaa   96
     39 Asn Leu Pro Leu Leu Asn Thr Asp Lys Pro Val Gln Ala Leu Met Lys
     40                  20                  25                  30
     42 att gcg gat gaa tta gga gaa atc ttt aaa ttc gag gcg cct ggt cgt   144
     43 Ile Ala Asp Glu Leu Gly Glu Ile Phe Lys Phe Glu Ala Pro Gly Arg
     44              35                  40                  45
     46 gta acg cgc tac tta tca agt cag cgt cta att aaa gaa gca tgc gat   192
     47 Val Thr Arg Tyr Leu Ser Ser Gln Arg Leu Ile Lys Glu Ala Cys Asp
     48          50                  55                  60
     50 gaa tca cgc ttt gat aaa aac tta agt caa gcg ctt aaa ttt gta cgt   240
     51 Glu Ser Arg Phe Asp Lys Asn Leu Ser Gln Ala Leu Lys Phe Val Arg
     52      65                  70                  75
     54 gat ttt gca gga gac ggg tta ttt aca agc tgg acg cat gaa aaa aat   288
     55 Asp Phe Ala Gly Asp Gly Leu Phe Thr Ser Trp Thr His Glu Lys Asn
     56  80                  85                  90                  95
     58 tgg aaa aaa gcg cat aat atc tta ctt cca agc ttc agt cag cag gca   336
     59 Trp Lys Lys Ala His Asn Ile Leu Leu Pro Ser Phe Ser Gln Gln Ala
     60                 100                 105                 110
     62 atg aaa ggc tat cat gcg atg atg gtc gat atc gcc gtg cag ctt gtt   384
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PATENT APPLICATION: US/10/031,146 TIME: 19:41:50

Input Set : A:\PTO.AMC.TXT
Output Set: N:\CRF3\06172002\J031146.raw

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63 Met Lys Gly Tyr His Ala Met Met Val Asp Ile Ala Val Gln Leu Val
64             115                 120                 125
66 caa aag tgg gag cgt cta aat gca gat gag cat att gaa gta ccg gaa   432
67 Gln Lys Trp Glu Arg Leu Asn Ala Asp Glu His Ile Glu Val Pro Glu
68         130                 135                 140
70 gac atg aca cgt tta acg ctt gat aca att ggt ctt tgc ggc ttt aac   480
71 Asp Met Thr Arg Leu Thr Leu Asp Thr Ile Gly Leu Cys Gly Phe Asn
72     145                 150                 155
74 tat cgc ttt aac agc ttt tac cga gat cag cct cat cca ttt att aca   528
75 Tyr Arg Phe Asn Ser Phe Tyr Arg Asp Gln Pro His Pro Phe Ile Thr
76 160                 165                 170                 175
78 agt atg gtc cgt gca ctg gat gaa gca atg aac aag ctg cag cga gca   576
79 Ser Met Val Arg Ala Leu Asp Glu Ala Met Asn Lys Leu Gln Arg Ala
80                 180                 185                 190
82 aat cca gac gac cca gct tat gat gaa aac aag cgc cag ttt caa gaa   624
83 Asn Pro Asp Asp Pro Ala Tyr Asp Glu Asn Lys Arg Gln Phe Gln Glu
84             195                 200                 205
86 gat atc aag gtg atg aac gac cta gta gat aaa att att gca gat cgc   672
87 Asp Ile Lys Val Met Asn Asp Leu Val Asp Lys Ile Ile Ala Asp Arg
88         210                 215                 220
90 aaa gca agc ggt gaa caa agc gat gat tta tta acg cat atg cta aac   720
91 Lys Ala Ser Gly Glu Gln Ser Asp Asp Leu Leu Thr His Met Leu Asn
92     225                 230                 235
94 gga aaa gat cca gaa acg ggt gag ccg ctt gat gac gag aac att cgc   768
95 Gly Lys Asp Pro Glu Thr Gly Glu Pro Leu Asp Asp Glu Asn Ile Arg
96 240                 245                 250                 255
98 tat caa att att aca ttc tta att gcg gga cac gaa aca aca agt ggt   816
99 Tyr Gln Ile Ile Thr Phe Leu Ile Ala Gly His Glu Thr Thr Ser Gly
100                260                 265                 270
102 ctt tta tca ttt gcg ctg tat ttc tta gtg aaa aat cca cat gta tta   864
103 Leu Leu Ser Phe Ala Leu Tyr Phe Leu Val Lys Asn Pro His Val Leu
104             275                 280                 285
106 caa aaa gca gca gaa gaa gca gca cga gtt cta gta gat cct gtt cca   912
107 Gln Lys Ala Ala Glu Glu Ala Ala Arg Val Leu Val Asp Pro Val Pro
108         290                 295                 300
110 agc tac aaa caa gtc aaa cag ctt aaa tat gtc ggc atg gtc tta aac   960
111 Ser Tyr Lys Gln Val Lys Gln Leu Lys Tyr Val Gly Met Val Leu Asn
112     305                 310                 315
114 gaa gcg ctg cgc tta tgg cca act gct cct gcg ttt tcc cta tat gca   1008
115 Glu Ala Leu Arg Leu Trp Pro Thr Ala Pro Ala Phe Ser Leu Tyr Ala
116 320                 325                 330                 335
118 aaa gaa gat acg gtg ctt gga gga gaa tat cct tta gaa aaa ggc gac   1056
119 Lys Glu Asp Thr Val Leu Gly Gly Glu Tyr Pro Leu Glu Lys Gly Asp
120                340                 345                 350
122 gaa cta atg gtt ctg att cct cag ctt cac cgt gat aaa aca att tgg   1104
123 Glu Leu Met Val Leu Ile Pro Gln Leu His Arg Asp Lys Thr Ile Trp
124             355                 360                 365
126 gga gac gat gtg gaa gag ttc cgt cca gag cgt ttt gaa aat cca agt   1152
127 Gly Asp Asp Val Glu Glu Phe Arg Pro Glu Arg Phe Glu Asn Pro Ser
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PATENT APPLICATION: US/10/031,146 TIME: 19:41:50

Input Set : A:\PTO.AMC.TXT
Output Set: N:\CRF3\06172002\J031146.raw

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128          370                 375                 380
130 gcg att ccg cag cat gcg ttt aaa ccg ttt gga aac ggt cag cgt gcg   1200
131 Ala Ile Pro Gln His Ala Phe Lys Pro Phe Gly Asn Gly Gln Arg Ala
132     385                 390                 395
134 tgt atc ggt cag cag ttc gct ctt cat gaa gca acg ctg gta ctt ggt   1248
135 Cys Ile Gly Gln Gln Phe Ala Leu His Glu Ala Thr Leu Val Leu Gly
136 400                 405                 410                 415
138 atg atg cta aaa cac ttt gac ttt gaa gat cat aca aac tac gag ctg   1296
139 Met Met Leu Lys His Phe Asp Phe Glu Asp His Thr Asn Tyr Glu Leu
140                 420                 425                 430
142 gat att aaa gaa act tta acg tta aaa cct gaa ggc ttt gtg gta aaa   1344
143 Asp Ile Lys Glu Thr Leu Thr Leu Lys Pro Glu Gly Phe Val Val Lys
144             435                 440                 445
146 gca aaa tcg aaa aaa att ccg ctt ggc ggt att cct tca cct agc act   1392
147 Ala Lys Ser Lys Lys Ile Pro Leu Gly Gly Ile Pro Ser Pro Ser Thr
148         450                 455                 460
150 gaa cag tct gct aaa aaa gta cgc aaa aag gca gaa aac gct cat aat   1440
151 Glu Gln Ser Ala Lys Lys Val Arg Lys Lys Ala Glu Asn Ala His Asn
152     465                 470                 475
154 acg ccg ctg ctt gtg cta tac ggt tca aat atg gga aca gct gaa gga   1488
155 Thr Pro Leu Leu Val Leu Tyr Gly Ser Asn Met Gly Thr Ala Glu Gly
156 480                 485                 490                 495
158 acg gcg cgt gat tta gca gat att gca atg agc aaa gga ttt gca ccg   1536
159 Thr Ala Arg Asp Leu Ala Asp Ile Ala Met Ser Lys Gly Phe Ala Pro
160                 500                 505                 510
162 cag gtc gca acg ctt gat tca cac gcc gga aat ctt ccg cgc gaa gga   1584
163 Gln Val Ala Thr Leu Asp Ser His Ala Gly Asn Leu Pro Arg Glu Gly
164             515                 520                 525
166 gct gta tta att gta acg gcg tct tat aac ggt cat ccg cct gat aac   1632
167 Ala Val Leu Ile Val Thr Ala Ser Tyr Asn Gly His Pro Pro Asp Asn
168         530                 535                 540
170 gca aag caa ttt gtc gac tgg tta gac caa gcg tct gct gat gaa gta   1680
171 Ala Lys Gln Phe Val Asp Trp Leu Asp Gln Ala Ser Ala Asp Glu Val
172     545                 550                 555
174 aaa ggc gtt cgc tac tcc gta ttt gga tgc ggc gat aaa aac tgg gct   1728
175 Lys Gly Val Arg Tyr Ser Val Phe Gly Cys Gly Asp Lys Asn Trp Ala
176 560                 565                 570                 575
178 act acg tat caa aaa gtg cct gct ttt atc gat gaa acg ctt gcc gct   1776
179 Thr Thr Tyr Gln Lys Val Pro Ala Phe Ile Asp Glu Thr Leu Ala Ala
180                 580                 585                 590
182 aaa ggg gca gaa aac atc gct gac cgc ggt gaa gca gat gca agc gac   1824
183 Lys Gly Ala Glu Asn Ile Ala Asp Arg Gly Glu Ala Asp Ala Ser Asp
184             595                 600                 605
186 gac ttt gaa ggc aca tat gaa gaa tgg cgt gaa cat atg tgg agt gac   1872
187 Asp Phe Glu Gly Thr Tyr Glu Glu Trp Arg Glu His Met Trp Ser Asp
188         610                 615                 620
190 gta gca gcc tac ttt aac ctc gac att gaa aac agt gaa gat aat aaa   1920
191 Val Ala Ala Tyr Phe Asn Leu Asp Ile Glu Asn Ser Glu Asp Asn Lys
192     625                 630                 635
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PATENT APPLICATION: US/10/031,146 TIME: 19:41:50

Input Set : A:\PTO.AMC.TXT
Output Set: N:\CRF3\06172002\J031146.raw

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194 tct act ctt tca ctt caa ttt gtc gac agc gcc gcg gat atg ccg ctt   1968
195 Ser Thr Leu Ser Leu Gln Phe Val Asp Ser Ala Ala Asp Met Pro Leu
196 640                 645                 650                 655
198 gcg aaa atg cac ggt gcg ttt tca acg aac gtc gta gca agc aaa gaa   2016
199 Ala Lys Met His Gly Ala Phe Ser Thr Asn Val Val Ala Ser Lys Glu
200                 660                 665                 670
202 ctt caa cag cca ggc agt gca cga agc acg cga cat ctt gaa att gaa   2064
203 Leu Gln Gln Pro Gly Ser Ala Arg Ser Thr Arg His Leu Glu Ile Glu
204             675                 680                 685
206 ctt cca aaa gaa gct tct tat caa gaa gga gat cat tta ggt gtt att   2112
207 Leu Pro Lys Glu Ala Ser Tyr Gln Glu Gly Asp His Leu Gly Val Ile
208         690                 695                 700
210 cct cgc aac tat gaa gga ata gta aac cgt gta aca gca agg ttc ggc   2160
211 Pro Arg Asn Tyr Glu Gly Ile Val Asn Arg Val Thr Ala Arg Phe Gly
212     705                 710                 715
214 cta gat gca tca cag caa atc cgt ctg gaa gca gaa gaa gaa aaa tta   2208
215 Leu Asp Ala Ser Gln Gln Ile Arg Leu Glu Ala Glu Glu Glu Lys Leu
216 720                 725                 730                 735
218 gct cat ttg cca ctc gct aaa aca gta tcc gta gaa gag ctt ctg caa   2256
219 Ala His Leu Pro Leu Ala Lys Thr Val Ser Val Glu Glu Leu Leu Gln
220                 740                 745                 750
222 tac gtg gag ctt caa gat cct gtt acg cgc acg cag ctt cgc gca atg   2304
223 Tyr Val Glu Leu Gln Asp Pro Val Thr Arg Thr Gln Leu Arg Ala Met
224             755                 760                 765
226 gct gct aaa acg gtc tgc ccg ccg cat aaa gta gag ctt gaa gcc ttg   2352
227 Ala Ala Lys Thr Val Cys Pro Pro His Lys Val Glu Leu Glu Ala Leu
228         770                 775                 780
230 ctt gaa aag caa gcc tac aaa gaa caa gtg ctg gca aaa cgt tta aca   2400
231 Leu Glu Lys Gln Ala Tyr Lys Glu Gln Val Leu Ala Lys Arg Leu Thr
232     785                 790                 795
234 atg ctt gaa ctg ctt gaa aaa tac ccg gcg tgt gaa atg aaa ttc agc   2448
235 Met Leu Glu Leu Leu Glu Lys Tyr Pro Ala Cys Glu Met Lys Phe Ser
236 800                 805                 810                 815
238 gaa ttt atc gcc ctt ctg cca agc ata cgc ccg cgc tat tac tcg att   2496
239 Glu Phe Ile Ala Leu Leu Pro Ser Ile Arg Pro Arg Tyr Tyr Ser Ile
240                 820                 825                 830
242 tct tca tca cct cgt gtc gat gaa aaa caa gca agc atc acg gtc agc   2544
243 Ser Ser Ser Pro Arg Val Asp Glu Lys Gln Ala Ser Ile Thr Val Ser
244             835                 840                 845
246 gtt gtc tca gga gaa gcg tgg agc gga tat gga gaa tat aaa gga att   2592
247 Val Val Ser Gly Glu Ala Trp Ser Gly Tyr Gly Glu Tyr Lys Gly Ile
248         850                 855                 860
250 gcg tcg aac tat ctt gcc gag ctg caa gaa gga gat acg att acg tgc   2640
251 Ala Ser Asn Tyr Leu Ala Glu Leu Gln Glu Gly Asp Thr Ile Thr Cys
252     865                 870                 875
254 ttt att tcc aca ccg cag tca gaa ttt acg ctg cca aaa gac cct gaa   2688
255 Phe Ile Ser Thr Pro Gln Ser Glu Phe Thr Leu Pro Lys Asp Pro Glu
256 880                 885                 890                 895
258 acg ccg ctt atc atg gtc gga ccg gga aca ggc gtc gcg ccg ttt aga   2736
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RAW SEQUENCE LISTING DATE: 06/17/2002
PATENT APPLICATION: US/10/031,146 TIME: 19:41:50

Input Set : A:\PTO.AMC.TXT
Output Set: N:\CRF3\06172002\J031146.raw

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260                 900                 905                 910
262 ggc ttt gtg cag gcg cgc aaa cag cta aaa gaa caa gga cag tca ctt   2784
263 Gly Phe Val Gln Ala Arg Lys Gln Leu Lys Glu Gln Gly Gln Ser Leu
264             915                 920                 925
266 gga gaa gca cat tta tac ttc ggc tgc cgt tca cct cat gaa gac tat   2832
267 Gly Glu Ala His Leu Tyr Phe Gly Cys Arg Ser Pro His Glu Asp Tyr
268         930                 935                 940
270 ctg tat caa gaa gag ctt gaa aac gcc caa agc gaa ggc atc att acg   2880
271 Leu Tyr Gln Glu Glu Leu Glu Asn Ala Gln Ser Glu Gly Ile Ile Thr
272     945                 950                 955
274 ctt cat acc gct ttt tct cgc atg cca aat cag ccg aaa aca tac gtt   2928
275 Leu His Thr Ala Phe Ser Arg Met Pro Asn Gln Pro Lys Thr Tyr Val
276 960                 965                 970                 975
278 cag cac gta atg gaa caa gac ggc aag aaa ttg att gaa ctt ctt gat   2976
279 Gln His Val Met Glu Gln Asp Gly Lys Lys Leu Ile Glu Leu Leu Asp
280                 980                 985                 990
282 caa gga gcg cac ttc tat att tgc gga gac gga agc caa atg gca cct   3024
283 Gln Gly Ala His Phe Tyr Ile Cys Gly Asp Gly Ser Gln Met Ala Pro
284             995                1000                1005
286 gcc gtt gaa gca acg ctt atg aaa agc tat gct gac gtt cac caa gtg   3072
287 Ala Val Glu Ala Thr Leu Met Lys Ser Tyr Ala Asp Val His Gln Val
288         1010                1015                1020
290 agt gaa gca gac gct cgc tta tgg ctg cag cag cta gaa gaa aaa ggc   3120
291 Ser Glu Ala Asp Ala Arg Leu Trp Leu Gln Gln Leu Glu Glu Lys Gly
292     1025                1030                1035
294 cga tac gca aaa gac gtg tgg gct ggg taa                         3150
295 Arg Tyr Ala Lys Asp Val Trp Ala Gly
296 1040                1045
298 <210> SEQ ID NO: 2
299 <211> LENGTH: 1048
300 <212> TYPE: PRT
301 <213> ORGANISM: Bacillus megaterium
303 <400> SEQUENCE: 2
305 Thr Ile Lys Glu Met Pro Gln Pro Lys Thr Phe Gly Glu Leu Lys Asn
306   1               5                  10                  15
308 Leu Pro Leu Leu Asn Thr Asp Lys Pro Val Gln Ala Leu Met Lys Ile
309              20                  25                  30
311 Ala Asp Glu Leu Gly Glu Ile Phe Lys Phe Glu Ala Pro Gly Arg Val
312          35                  40                  45
314 Thr Arg Tyr Leu Ser Ser Gln Arg Leu Ile Lys Glu Ala Cys Asp Glu
315      50                  55                  60
317 Ser Arg Phe Asp Lys Asn Leu Ser Gln Ala Leu Lys Phe Val Arg Asp
318  65                  70                  75                  80
320 Phe Ala Gly Asp Gly Leu Phe Thr Ser Trp Thr His Glu Lys Asn Trp
321                  85                  90                  95
323 Lys Lys Ala His Asn Ile Leu Leu Pro Ser Phe Ser Gln Gln Ala Met
324             100                 105                 110
326 Lys Gly Tyr His Ala Met Met Val Asp Ile Ala Val Gln Leu Val Gln
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RAW SEQUENCE LISTING ERROR SUMMARY DATE: 06/17/2002
PATENT APPLICATION: US/10/031,146 TIME: 19:41:51

Input Set : A:\PTO.AMC.TXT
Output Set: N:\CRF3\06172002\J031146.raw

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; N Pos. 16,17,18
Seq#:4; N Pos. 13,14,15
Seq#:5; N Pos. 16,17,18
Seq#:6; N Pos. 17,18,19
Seq#:7; N Pos. 25,26,27
Seq#:8; N Pos. 15,16,17